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**McGrail et al.**

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(54) **METHODS FOR ASSOCIATING OR DISSOCIATING GUEST MATERIALS WITH A METAL ORGANIC FRAMEWORK, SYSTEMS FOR ASSOCIATING OR DISSOCIATING GUEST MATERIALS WITHIN A SERIES OF METAL ORGANIC FRAMEWORKS, AND GAS SEPARATION ASSEMBLIES**

(52) **U.S. Cl.**  
CPC ..... *C25B 15/00* (2013.01); *B01D 53/02* (2013.01); *B01D 53/04* (2013.01); *B01D 53/1475* (2013.01); *B01D 53/32* (2013.01); *B01D 53/326* (2013.01); *F23J 15/02* (2013.01);  
(Continued)

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(58) **Field of Classification Search**  
USPC ..... 96/121, 143; 95/139, 148; 502/526; 423/230; 204/267; 205/763  
See application file for complete search history.

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 83 days.

This patent is subject to a terminal disclaimer.

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**Related U.S. Application Data**

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(51) **Int. Cl.**  
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(Continued)

(57) **ABSTRACT**

Methods for releasing associated guest materials from a metal organic framework are provided. Methods for associating guest materials with a metal organic framework are also provided. Methods are provided for selectively associating or dissociating guest materials with a metal organic framework. Systems for associating or dissociating guest materials within a series of metal organic frameworks are provided. Gas separation assemblies are provided.

**16 Claims, 9 Drawing Sheets**

